SEREDENKO, M.M., kand.ekon.nauk; KUGUSHEV, M.F. [Kuhushev, M.F.];
    PRAVDIN, M.V.; FOMICHEV, V.I.; ALEKSANDROVA, V.P.; GORODETSKIY,
    N.I. [Horodets'kyi, N.I.]; DYATLOV, T.I.; KALITA, M.S. [Kalyta,
    M.S.]; DARAGAN, M.V. [Darahan, M.V.]; RADINA, Yu.M.; VOROB'YEVA,
    K.T. [Vorobyova, K.T.]; LASTIVKA, N.N.; STARODUBSKIY, R.D.
    [Starodubs'kyi, R.D.]; YATSENKO, P.F.; MUROMTSEVA, G.M.
    [Muromtseva, H.M.]; RASNER, S.I.; CHERNYAK, K.I.; KOBILYAKOV,
    I.I. [Kobyliakov, I.I.]; ALEKSANDROVA, V.O., kand.ekonom.nauk,
    otv.red.; DEMIDYUK, V.F. [Demydiuk, V.F.], red.; LIBERMAN, T.R.,
    tekhn.red.

[Ways of increasing profits in metallurgical industries] Shliakhy
pidvyshchennia rentabel'nosti metalurgiinykh pidpryiemstv. Kyiv,
Vyd-vo Akad.nauk URSR, 1961. 93 p.

                                              (MIRA 14:6)

1. Akademiya nauk USSR, Kiyev. Institut ekonomiki. 2. Institut
ekonomiki AN USSR (for Seredenko, V.P.Aleksandrova, Kalita,
Daragan, Radina). 3. Dnepropetrovskiy khimiko-tekhnologicheskiy
institut (for Gorodetskiy, Dyatlov). 4. Dneprodzerzhinskiy
metallurgicheskiy institut (for Kobilyakov).
    (Dnepropetrovsk Province—Steel industry—Costs)

STARODUBSKIY, R.D.

Improving planning indices in metallurgical plants. Stal'
22 no.2:169 F '62.   (MIRA 15:2)

1. Zavod im. Dzerzhinskogo.
            (Metallurgical plants---Accounting)

AUTHOR: Starodubtsev, A. M.

TITLE: The Inherent Noise in a Transmission Line with Losses
(Sobstvennyye shumy linii peredachi s poteryami)

ABSTRACT: The spectral noise density and the mean square of the noise voltage
are determined for a transmission line with arbitrary terminations and with an
allowance for losses in the line. Specific cases of matched loads on the re-
ceiving or transmitting end or on both ends are examined. The results obtained
can be used for the analysis of errors in measuring weak noise, and also for
measuring line losses on the basis of inherent thermal radiation.

                                                            N.A.S.

Card 1/1

68202

SOV/58-59-5-11401

3. 1720

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 5, pp 213 - 214 (USSR)

AUTHORS: Strezhneva, K.M., Plechkov, V.M., Starodubtsev, A.M.

TITLE: Investigation of the Correlation Between Solar Radio Emission Intensity and Visible Active Formations on the Sun

PERIODICAL: Solnechnyye dannyye, 1958, Nr 7, pp 71 - 76

ABSTRACT: The authors submit the results of daily observations of solar radio emission on 1.6, 3.2, 10 and 145 cm wavelengths. These observations were conducted at the NIRFI radioastronomical station in Zimenka near the town of Gor'kiy during the period 1955 - 1957. As a rule, the cm-wavelength radio-emission intensity during the course of the day remained constant within the limits of measurement accuracy (10%). The authors describe the cases of intensity variation which exceed this magnitude. In the period 1956 - 1957 the effective temperature T_{ef} of the quiet sun's radio emission on 1.6, 3.2, 10 and 145 cm wavelengths was equal to 8×10^3, 17×10^3, 45×10^3, and 10^6 degrees K respectively. The authors studied the correlation between the total area of spots S_p and the effective temperature of the sun. For the 10 and 145 cm wave-

Card 1/2

68202
SOV/58-59-5-11401

Investigation of the Correlation Between Solar Radio Emission Intensity and Visible
Active Formations on the Sun

lengths a better correlation is that not with S_p but rather with the so-called
"complex" spot area $S_p = aS_o + bS_{-1} + cS_{-2} = \ldots$, where S_o is the average monthly
area of spots which have appeared during the period in question, S_{-1} is the average
monthly area of spots which have completed one turn around the sun, S_{-2} is that of
spots which have completed two turns, etc., while a, b and c are coefficients, the
combination of which maximizes the correlation. On the 3.2 cm wavelength allowance
for the preceding turns did not lead to an improvement of the correlation. On the
145 cm wavelength the enhanced radiation connected with active sources exceeds in
intensity the quiet sun's radiation level by a factor of 6 - 10, the greatest
correlation being with a spot area in the central region ($r = 0.5\ R_\odot$) of the disk.
The correlation coefficient between T_{ef} and S_p for this region amounts to 0.48 (as
against 0.28 for the entire disk). The T_{ef} correlation on the 3.2 and 10 cm wave-
lengths is high (+0.8), on the 10 and 145 cm wavelengths it is negligible (+0.38),
and on the 3.2 and 145 cm wavelengths it is nonexistent (+0.1). (Gor'kovsk. n.-i.
radiofiz. in-t, USSR).

A.S.

Card 2/2

3,1720

69366

SOV/35-59-10-8034

Translation from: Referativnyy zhurnal. Astronomiya i Geodeziya, 1959, Nr 10, p 54
(USSR)

AUTHORS: Strezhneva, K.M., Plechkov, V.M., Starodubtsev, A.M.

TITLE: The Study of the Correlation of Intensity of Solar Radio Radiation With
               Visible Active Formations on the Sun. II.

PERIODICAL: Solnechnyye dannyye, 1958 (1959), Nr 8, pp 72-75

ABSTRACT: In addition to the correlation between the intensity of solar radio radi-
               ation and the areas of spots examined in Part I (RZhAstr, 1959, Nr 5, 3621),
               results are cited of the correlation between the intensities at the wave-
               lengths of 3.2; 10 and 145 cm, measured during 1955 - 1957 and the areas of
               calcium flocculi, faculas and prominences. Likewise the flares of solar
               radio radiation are correlated with the chromospheric flares. For the peri-
               od when the areas of spots changed only slightly, while the facula areas
               changed sharply (March 1956), the coefficients of the correlation of in-
               tensity at λ = 10 and 3.2 cm wavelengths with the areas of faculas were
               found to be equal to 0.3 and 0.44, respectively, and with the areas of floc-
Card 1/2   culi - 0.2 and 0.38, respectively. For the period of a sharp change of pro-

AUTHORS: Kapustin, I.N., Starodubtsev, A.M. and Shafer, G.V.

TITLE: Circuit diagram for a transistorized neutron monitor

TEXT: The transistorized circuit for neutron monitors is free from the basic faults of vacuum-tube circuits. By increasing the high voltage on the counters to 2200-2400 V (as compared to 1600 - 1800 V for conventional monitors), the amplification factor of the circuit is reduced to 500-1000 (as compared with $\sim10^4$ in vacuum-tube circuits) and the latter becomes considerably less sensitive to noise. Since no frequent replacement of components is required, the amplification factor of the transistorized circuit is much more stable than that of the vacuum-tube circuit. The device is design- ed to operate on 110 to 120 V; when disconnected from the mains, the circuit switches over automatically to a 12 V battery. There are 10 figures.

Card 1/2

S/203/62/002/004/016/018
I046/I242

Circuit diagram for a transistorized...

ASSOCIATION: Laboratoriya fizicheskikh problem Yakutskogo filiala
SO AN SSSR (Laboratory of Physical Problems of the
Yakutsk Division, SO AS USSR)

SUBMITTED: March 8, 1962

Card 2/2

33777
S/108/62/017/001/004/007
D271/D304

9,2571 (1147)

AUTHOR: Starodubtsev, A.M., Member of the Society (see Asso-
ciation)

TITLE: A contribution to calculating optimal parameters of
ferrite systems based on the Faraday effect

PERIODICAL: Radiotekhnika, v. 17, no. 1, 1962, 32 - 39

TEXT: Analysis of ferrite isolators and modulators aims at estab-
lishing methods for optimalizing ferrite devices and studying their
behavior, when operating with complex loads. A general ferrite sys-
tem is shown in a figure; arrows drawn near the terminals of the
eight-pole network show directions of electric vectors of forward
or reflected waves. U_{1n}, etc. are complex amplitudes of incident
waves U_{10}, etc. are complex amplitudes of waves leaving the ports;
γ_ϕ is the complex propagation constant in the part of the system
which contains ferrite, and γ — complex propagation constant in all
arms; ξ — an angle of rotation of the polarization plane of the
electric vector; l — electric length of the path; ρ — wave impedan-

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S/108/62/017/001/004/007
D271/D304

A contribution to calculating ...

ce of the transmission line; E - sources of signals and noise. Starting from the relations between incident and reflected waves on the left-hand and right-hand terminals of the system, the voltage on the load Z_1, originating from the four existing sources, is found to consist of four components of the type:

$$U_{11} = \frac{1}{2}\left\{1 - \frac{(1 - p_1([A - p_2(AD - BC)]}{(1 - p_1 A)(1 - p_2 D) - p_1 p_2 BC}\right\}(1 - p_1)E_1, \qquad (4)$$

where A, B, C, D are functions of the rotational angle ξ, propagation constants, lengths of paths and reflection coefficients p. The voltage on terminals of port 1, due to thermal noise of the ferrite element and transmission lines, is determined by the impedance of port 1 which is equal to

$$Z_n = \frac{U_{11}}{I_1} = \frac{1}{2}\frac{[(1 - A)(1 - p_2 D) + p_2 BC](1 + p_1)}{(1 - p_1 A)(1 - p_2 D) - p_1 p_2 BC}. \qquad (9)$$

It is assumed in the analysis of the ferrite isolator that energy

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S/108/62/017/001/004/007
D271/D304

A contribution to calculating ···

is passed from port 3 to port 1, that Z_2 and Z_4 are well matched loads and their temperature is equal to the ambient T_0. Temperature of port 3 takes into account both noise and signal energy of Z_3.

Spectral density components of the mean square of the full noise voltage in port 1, due to noise sources E_1, E_2, E_3, E_4, and spectral density of the transmission line and ferrite element noise, are all written out. The forward attenuation of the signal travelling from 3 to 1 through the ferrite element is

$$K_{forward} = (1 - p_{30}^2) \frac{(1 + p_{10}^2 + 2p_{10}\cos\delta_1)\, e^{-2\alpha l_{10}}}{1 + p_{10}^2 p_{20}^2 p_{30}^2 p_{40}^2\, e^{-4\alpha l} + 2p_{10}p_{20}p_{30}p_{40}\, e^{-2\alpha l} \times \to} \tag{15}$$

$$\to \times \cos(2\beta l + \delta_1 + \delta_2 + \delta_3 + \delta_4).$$

With ferrite attenuation of 1 dB and reflection coefficients p = 0.2 the useful signal is attenuated by 1.2 dB. Reverse attenuation of the signal travelling from 1 to 3 is

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S/108/62/017/001/004/007
D271/D304

A contribution to calculating ...

$$K_{reverse} = (1 - p_{10}^2) \frac{(1 + p_{30}^2 + 2p_{3?}\cos\delta_3)\, p_{40}^2\, p_{20}^2\, e^{-2(\alpha l_{13} + \alpha l_{23} + \alpha l_{24})}}{1 + p_{1o}^2 p_{2o}^2 p_{3o}^2 p_{4v}^2 e^{-4\alpha l} + 2p_{1o}p_{2o}p_{3o}p_{4o} e^{-2\alpha l} \times \to} \tag{16}$$
$$\to \times \cos(2\beta l + \delta_1 + \delta_2 + \delta_3 + \delta_4)$$

Assuming values as before, reverse attenuation is 30 dB. Even small reflections from the loads cause interference errors; noise of Z_1 produces the strongest interference; the effect is much weaker than in systems without a ferrite isolator. The ferrite modulator is analyzed assuming that sources of power are connected to 3 and 4, Z_2 is an absorbing load, Z_1 ar Z_2 are well matched. Spectral density components of the mean square of the full voltage in 1 will be of the type

$$W_{11} = kT_1 \rho \Delta f \left\{ 1 + \frac{1}{8} \left[p_{30}^2 e^{-4\alpha l_{13}} + p_{40}^2 e^{-4\alpha l_{14}} + 2p_{30}p_{40} e^{-2(\alpha l_{13} + \alpha l_{14})} \times \right. \right.$$
$$\times \cos(2\beta l_{13} - 2\beta l_{14} + \delta_3 - \delta_4) \right] +$$
$$+ \cos 2\xi \left[p_{30} e^{-2\alpha l_{13}} \cos(2\beta l_{13} + \delta_3) + p_{40} e^{-2\alpha l_{14}} \cos(2\beta l_{14} + \delta_4) \right] +$$
$$+ \frac{1}{8} \cos 4\xi \left[p_{30}^2 e^{-4\alpha l_{13}} + p_{40}^2 e^{-4\alpha l_{14}} + 2p_{30}p_{40} e^{-2(\alpha l_{13} + \alpha l_{14})} \times \right. \tag{17}$$

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A contribution to calculating ...

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S/108/62/017/001/004/007
D271/D304

$$x \cos(2\beta l_{13} - 2\beta l_{14} + \delta_3 - \delta_4)]\}, \tag{17}$$

and

$$W_{14} = \frac{1}{2} kT_4 \rho \Delta f(1 - p_{40}^2)(1 - \sin 2\xi)e^{-2\alpha l_{14}}. \tag{20}$$

The expression is also written out for the spectral density of noise in the transmission line and ferrite. Two practical cases of modulation are considered, rectangular with the polarization plane oscillating according to the law

$$\xi = -\xi_0 + m(t)(2\xi_0 + \Delta\xi), \tag{22}$$

and sinusoidal with the law

$$\xi = \Delta\xi + \xi_0 \sin \Omega t, \tag{28}$$

where $\Delta\xi$ is the angle of space asymmetry. Expressions are derived for the components of the first harmonic of the modulating frequency. The optimal angle of modulation is found as $90°$ for the rectangular and $52.5°$ for the sinusoidal modulation. If space and time asymmetries are small, rectangular modulation brings a 9 % gain in

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33777
S/108/62/017/001/004/007
A contribution to calculating ...   D271/D304

the signal transfer factor by comparison with the sinusoidal modu-
lation. If space asymmetry is present, a parasitic signal appears,
stronger in the case of sinusoidal modulation. There are 1 figure,
and 1 Soviet-bloc reference.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i
                elektrosvyazi im. A.S. Popova (Scientific and Techni-
                cal Society of Radio Engineering and Electrical Com-
                munications imeni A.S. Popov) [Abstractor's note: Na-
                me of association taken from first page of journal]

SUBMITTED: December 24, 1960 (initially)
                May 18, 1961 (after revision)

Card 6/7/6

L 13758-65   EWG(j)/EWT(1)/EWT(m)/EWG(v)/FCC/EEC(t)/T   Pe-5/Po-4/Pae-2/Pb-4
IJP(c)/AFMDC/AFETR/AFMD(t)/AFWL/AS(mp)-2/SSD/AEDC(a)/ASD(a)-5/ESD(gs)/ESD(dp)/
ESD(t) GW
ACCESSION NR: AP4044093   S/0141/64/007/003/0399/0405

AUTHOR: Starodubtsev, A. M.   B

TITLE: Effective temperature of the lunar surface due to its re-
flection of cosmic radiation

SOURCE: IVUZ. Radiofizika, v. 7, no. 3, 1964, 399-405

TOPIC TAGS: lunar surface property, lunar reflectivity, lunar
temperature, lunar emission, cosmic radiation, dielectric constant

ABSTRACT: Straightforward geometrical-optics calculations are used
to determine the effective lunar-surface temperature at frequencies of
100,200, and 400 Mc. The moon is assumed to be an ideally smooth
surface and have a dielectric constant ranging from 1.5 to 4. Al-
though the roughness of the moon must be taken into account in more
accurate calculations, this cannot be done at present until more
data are obtained on the reflecting properties of the moon's surface

Card 1/3

L 13758-65
ACCESSION NR: AP4044093

(by active radar methods). In addition to the obvious results,
that the brightness temperature due to the reflection increases with
the dielectric constant and with the wavelength, the calculations
also show that: a) the brightness temperature varies little with
the ascension angle of the moon, with some increase in the tempera-
ture observed only near 280°, and b) the degree of polarization of
the radiation reflected from the lunar surface increases somewhat
with increasing dielectric constant, but does not exceed 10% for
$\varepsilon = 1.5$, and has an average value 2--5%. "The author thanks V. S.
Troitskiy for suggesting the problem and for collaboration in its
solution, V. A. Razin for valuable advice, and Ya. I. Al'ber for
programming the problem and for carrying out the calculations on
the electronic computer." Orig. art. has: 8 figures and 7 formulas.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut
pri Gor'kovskom universitete (Scientific Research Radiophysics
Institute at the Gorkiy University)

Card 2/3

L 13758-65
ACCESSION NR: AP4044093

SUBMITTED: 19Mar63

SUB CODE: AA

NO REF SOV: 003

ENCL: 00

OTHER: 004

3/3

PUTVINSKAYA, T.M.; DYNCHENKO, M.M.; STARODUBTSEV, A.M.

Melting point of monomethylamine chloride. Zhur. prikl. khim.
37 no.12:2764-2766 D '64.   (MIRA 18:3)

1. Gosudarstvennyy institut prikladnoy khimii.

L 24838-65   EWT(m)/EPF(c)/EWP(j)/T   Pc-4/Pr-4/Pa-4   RM

ACCESSION NR: AP4047400   S/0062/64/000/010/1877/1879

AUTHOR: Andrianov, K. A.; Yezerets, M. A.; Shul'ga, F. F.; Starodubtsev, E. S.

TITLE: The synthesis of dimethyldichlorosilane

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 10, 1964, 1877-1879

TOPIC TAGS: dimethyldichlorosilane, synthesis, silicon copper alloy, catalyst activation, catalyst alloy structure

ABSTRACT: The reaction of methyl chloride with Si-Cu alloys was investigated to determine optimum conditions for the synthesis of dimethyldichlorosilane (DMDCS). The yield of DMDCS dropped sharply after about 5 hours reaction time; increasing reaction temperature and changing feed rate have no effect on the yield. Addition of group II metal halide promoters extended the time during which a high yield (80%) of DMDCS was obtained to about 15 hours. After 20 hours the yield dropped 20% from the maximum. Treatment of the alloy prior to activation with the metal halide however did not increase the yield of DMDCS but did increase

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L 24838-65

ACCESSION NR: AP4047400

methyltrichlorsilane and carbon yields. The use of a fine grain structured alloy increased DMDCS yield 10-12%. Copper in the alloy was found to cause side reactions, decomposition of the methyl chloride, formation of methyltrichlorosilane, methyldichlorosilane and carbon. On reducing the copper content in the alloy (Abstractor's note: composition was not indicated), 83-84% DMDCS was obtained for 10 hours and 80% yield was obtained even after 30-40 hours. Orig. art. has: 2 tables, 3 figures, and 3 equations.

ASSOCIATION: Institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Institute of Fine Chemical Technology)

SUBMITTED: 13Feb64   ENCL: 00

SUB CODE: GC, OC   NO REF SOV: 002   OTHER: 004

Card   2/2

STARODUBTSEV, F. (Saratov)

Standard computations on keyboard calculating machines. Bukhg. uchet. 15 no.8:35-42 Ag '56. (MLRA 9:10)

1. Zamestitel' glavnogo bukhgaltera Saratovskogo podshipnikovogo zavoda.
          (Machine accounting) (Production standards)

STARODUBTSEV, F.I.

Upper bushing of the main bearing of the KHTZ-NATI tractor with a modified oil groove. Sakh.prom. 27 no.10:36 '53.   (MLRA 6:11)

(Bearings (Machinery))

1. Sakharnyy zavod im.Lenina.

DASHKEVICH, N.N.; STARODUBTSEV, G.S.; GERMANOV, Ye.K.

Kimberlite pipes and the structure of the Chadobets uplift. Mat. po geol. i pol.iskop.Kras.kraia no.3:117-130 '62.   (MIRA 17:2)

STARODUBTSEV, I., mashinist elektrovoza

My plans. Mast. ugl. 7 no.8:24 Ag '58.

(MIRA 11:9)

1.Shakhta No. 30 tresta Bokovoantratsit.
(Donets Basin--Coal miners)

SHANDOR, K., dispetcher; SORGOVSKIY, V.; STARODUBTSEV, I., doverennyy vrach
(g.Sumy); RAZUMNYY, A.; TRET'YACHENKO, B.

Contrasts in Sumy. Okhr. truda i sots. strakh. 3 no.7:58-59 Jl
'60.
(MIRA 13:8)

1. Reydovaya brigada. 2. Sumskiy remontno-stroitel'nyy trest
(for Shandor). 3. Tekhnicheskiy inspektor Sumskogo oblsovprofa
(for Sorgovskiy); 4. Korrespondent gazety "Leninskaya
pravda," g.Sumy (for Razumnyy). 5. Spetsial'nyy korrespondent zhurnala
"Okhrana truda i sotsial'noye strakhovaniye," g.Sumy (for Tret'yachenko).
(Sumy—Industrial hygiene)
(Women—Employment)

STARODUBTSEV, I.G.

4867. **MAXIMUM PERMISSIBLE LIMITS OF CONCENTRATION OF EXPLOSIVE GASES IN MINE ATMOSPHERE.** Starodubtsev, I. G. (Ugol (Coal), Sept. 1951, 27-30). The ignitability and explosibility of mixtures of air with hydrogen and with methane-heptane are considered and a method is suggested for calculating maximum safe concentrations. (L).

L 42060-65   FSS-2/EWT(1)/EWG(v)/EWA(d)/T/EED(b)-3   Pn-4/Pe-5/Pae-2   IJP(c)   GW

ACCESSION NR: AP5010929   UR/0286/65/000/007/0114/0114

AUTHORS: Shugayev, G. A.; Starodubtsev, I. S.; Zakharov, V. I.

TITLE: Aerophotographic collimator sight. Class 42, No. 169822

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 7, 1965, 114

TOPIC TAGS: aerial photography, photographic optics, photographic device

ABSTRACT: This Author Certificate presents an aerophotographic collimator sight containing a grid of filaments with the course indicating lines (see Fig. 1 on the Enclosure). The grid may be projected onto the surface of the ground by means of an optical device and a device for stabilizing the sight axis at a desired azimuth. To widen the angle of vision of the sight, the optical device is made in the form of a semitransparent curved mirror, as, for instance, parabolic-spherical. The grid is placed in the focus of this mirror. In an alternate design the rotor of the selsyn receiver is placed on the rotation axis of the sight. Orig. art. has: 1 figure.

SUB CODE: ES

ASSOCIATION: none

SUBMITTED: 25Feb64   ENCL: 01

NO REF SOV: 000   OTHER: 000

Card 1/2

L 42060-65

ACCESSION NR: AP5010929

Fig. 1. 1- mirror; 2- grid of threads;
3- rotation axis of the sight; 4- rotor

Card 2/2

STARODUBTSEV, I.S.

Accidents can be prevented. Vest. sviazi 25 no.3:24 Mr '65.
(MIRA 18:5)

1. Starshiy inzh. po tekhnike bezopasnosti Volgogradskogo oblastnogo
upravleniya svyazi.

M

Country   : USSR
Category   : CULTIVATED PLANTS, GRAINS

Abs. Jour.   : REF ZHUR BIOL., 21.1958, No. 95967

Author   : Starodubtsev, N.
Institut.   :
Title   : The Narrow-Row Planting of Millet

Orig. Pub.   : Zemledeliye, 1957, No. 3, 79-80

Abstract   : At Bazaro-Syzganskiy Variety Plot in Ul'yanovskaya
               Oblast' a trial was made in 1954-1956 of different
               methods of sowing the Dolinskoye 86 variety:
               wide-row (with 45 cm between the rows), uniform
               row and narrow-row planting (with 7.5 cm between
               the rows). The highest yield of 19.5 cwt/ha. was
               gotten with narrow-row planting. In wide-row
               sowing the plant viability was significantly less
               than in the narrow-row. The best time for planting
               millet by the narrow-row method in the gray forest

Card: 1/2

42

Category   : CULTIVATED PLANTS. GRAINS   M

Abs. Jour.   : REF ZHUR.BIOL.,21,1958, NO-95367

Author   :
Institut.   :
Title   :

Orig. Pub.   :

Abstract   : soil of Ul'yanovskaya Oblast' is in the last five
                days of May.--G.N. Chernov

Card: 2/2

KOVAL'CHUK, I.; STARODUBTSEV. N.

Today innovators are promoting research, tomorrow all workers will take part in it. Mashinostroitel' no.10:8-9 0 '61. (MIRA 14:9)

(Rostov-oh-Don--Agricultural machinery industry)

BARBUKOVA, V.I., kand. ist. nauk; DEMIDOVA, Z.F., kand. ist. nauk;
POSELYANINA, O.K., kand. ist. nauk; SORIN, Yu.N., kand.
ist. nauk; SHATVORCVA, V.D., kand. ist. nauk; KHRUSHCHEV,
V.I.; STARODUBTSEV, N.I.; SHVETS, I.Ye.; TOROPCHIN, N.S.;
red.; IVANOVA, R.N., tekhn. red.

[Krasnyi Aksay; from the history of the M.V.Frunze Rostov
Plant of Agricultural Machinery]Krasnyi Aksai; iz istorii
Rostovskogo zavoda sel'skokhoziaistvennogo mashinostroeni-
ia imeni M.V.Frunze. Rostov-na-Donu, Rostovskoe knizhnoe izd-
vo, 1962. 158 p.   (MIRA 15:9)

1. Prepodavateli Rostovskogo gosudarstvennogo universiteta
(for Barbukova, Demidova, Poselyanina, Sorin, Shatvorova).
2. Otvetstvennyy sekretar' mnogotirazhnoy gazety "Krasnyy
aksayets" (for Khrushchev). 3. Zaveduyushchiy kabinetom po-
liticheskogo prosvesheheniya partiynogo komiteta Rostovskogo
zavoda sel'skokhozyaystvennogo mashinostroyeniya "Krasnyy
Aksay" (for Starodubtsev). 4. Rabochiy remontno-mekhanicheskogo
tsekha Rostovskogo zavoda sel'skokhozyaystvennogo mashino-
stroyeniya "Krasnyy Aksay" (for Shvets).
              (Rostov-on-Don—Agricultural machinery)

STARODUBTSEV, Nikolay Lukich; VASIL'YEV, A.I., kand. tekhn. nauk, otv. red.;
NAZARYANTS, T.M., red.; VYALYKH, A.M., tekhn. red.

[Power and fuel balance of Western Siberia] Toplivno-energeticheskii
balans Zapadnoi Sibiri. Novosibirsk, Izd-vo Sibirskogo otdeleniia
AN SSSR, 1960. 52 p.   (MIRA 14:7)
          (Siberia, Western--Power resources)

STARODUBTSEV, N.L.

Over-all utilization of natural resources in Tyumen' Province based on the development of its power resources. Izv. Sib. otd. AN SSSR no.5:3-11 '58.   (MIRA 11:9)

1.Zapadno-Sibirskiy filial AN SSSR.
                    (Tyumen' Province--Natural resources)

VASIL'YEV, A.I., kand.tekhn.nauk; STARODUBTSEV, N.L., inzh.; CHEL'TSOV, M.B. inzh.; SAVCHUK, M.G., inzh.

Peat is an important power fuel in Western Siberia. Torf. prom. 35 no.5:22-24 '58. (MIRA 11:10)

1.Transportno-energeticheskiy institut zapadno-sibirskogo filiala AN SSSR (for Chel'tsov). 2.Novosibirskoye mezhoblastnoye upravleniye torfyanogo fonda (for Savchuk).
(Siberia, Western--Peat)

M.

USSR/Cultivated Plants - Grains.

Abs Jour   : Ref Zhur - Biol., No 4, 1958, 15581

Author   : N.S. Starodubtsev
Inst   :
Title   : Buckwheat, a Valuable and Profitable Crop.
              (Grechikha--tsennaya i vygodnaya kul'tura).

Orig Pub   : S. kh. Povolzh'ya, 1957, No 6, 42-44.

Abstract   : No abstract.

Card 1/1

KOZIN, N.I.; STARODUBTSEV, N.V.

Method for the manufacture of pastelike (cheese) emulsions.
Izv.vys.ucheb.zav.; pishch.tekh. no.5:130-136 '59. (MIRA 13:4)

1. Moskovskiy institut narodnogo khozyaystva imeni G.V.
Plekhanova, laboratoriya zhirov.
                    (Cheese)

STARODUBTSEV, N.V.; RAKITIN, V.Yu.; MOROZOVA, L.A.

Homogenized food products in aluminum tubes. Trudy VNIIKOP no.11:
7-11 '62.

(MIRA 17:9)

33

Surface Ionization of Thin Layers of Calcium and Magnesium Oxides. (In English.) L. N. Dobretzov. S. V. Starodubtzev, and J. I. Timokhina. *Comptes Rendus de l'Académie des Sciences de l'URSS*, v. 55, no. 4, 1947, p. 303-306.

Outlines results of experiments on the above phenomenon for oxide layers on metals at temperatures of incandescence. Tungsten was used as the base metal for the filaments. It was found that the volt-ampere curves from such filaments did not exhibit the anomalous Schottky effect, which is typical of all complex cathodes. Therefore, surface ionization on oxide films differs substantially from surface ionization on pure metals.

STARODUBTSEV, S. V.

Starodubtsev, S. V. "On the theory of formation of positive ions on incandescent electrodes", Trudy ... - tekhn... ... (Aka . n... U... . SSR), Vol. II, Issue 1, 1949, p. 5-18, - Bibliog: p. 17-18.

So: U-3261, 10 April 53, (Letopis 'Zhurnal 'nykh Statey, No. 12, 1949).

3

Electron emission of thin layers of boron oxide under the impact of positive ions. S. V. Starodubtsev. *Doklady Akad. Nauk S.S.S.R.* **62**, 765–8(1948).—Thin layers of B₂O₃, formed by evapn. and condensation, emit electrons under bombardment by K⁺ ions. A sudden increase of the intensity of the emission is observed when the thickness of the layer reaches about 2×10^{-4} cm. At this stage, electron emission continues even when the pos. K⁺ ions are shut off, under the sole influence of the pos. charge of the B₂O₃ film. The emission stops immediately when the elec. field is turned off; it can be renewed under the action of K⁺ ions. Analogous phenomena were observed with films of MgO and BaO. The persistence of the emission without K⁺ ions is attributed to collision ionization inside the dielectric, requiring a min. thickness.   N. Thon

METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

1730. Electron emission produced by bombarding dielectric membranes with positive ions. S. V. Starodubtsev. Zhur. Eksptl. i Teoret. Fiz. 19, 297-9(1949) Apr. (in Russian) (See also NSA 2-1820).

Emission of electrons from thin layers of dielectrics that have been subjected to a preliminary bombardment with positive ions was discovered by Malter (Phys. Rev. 49, 379(1936) and 50, 48 (1936)). The present author studied this effect on membranes of B_2O_3 and KCl, about 2×10^{-4} cm thick, bombarded by potassium ions. A steady electron emission was observed, lasting long after the bombardment had ceased. The phenomenon is explained by a continuous positive recharging of the membrane due to the ionization produced by the electrons during their passage through the membrane. 18 references, half of which are Russian.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

c A

Emission of positive ions by incandescent oxides of titanium, zirconium, and silicon. S. Z. Starolet-v and Yu. I. Timokhina (Leningrad Phys.-Tech. Inst.) Zhur. Tekh. Fiz. 19, 600-10(1949). (1) The emission was investigated by mass spectrography, with powders of the oxides held in a heated W wire spiral, in a vacuum of 10^{-4} mm. Hg, acceleration to 1500 v. Presumedly pure TiO_2 emitted, up to 1600°K., only ions of impurities, particularly mass 34 ascribed to H_2O, and K^+ and Na^+; the amt. of the latter impurity ($K + Na$) in the original prepn. could be estd. to 4×10^{-4}. Long heating at 1500°K. resulted in disappearance of the impurity ions, 1st H_2O, then K^+ and Na^+, last Ca^+. Ions of Ti^+ H_2O_2, then K^+ and Na^+, followed, at still higher temp., appeared at about 1600°K., followed, at still higher temp., by TiO^+. These peaks increased owing to evapn. of neutral Ti, 2800°K., then decreased owing to evapn. of neutral Ti, TiO, and TiO_2. The optimum temp. for production of Ti^+ ions is ~2000°K.; at this optimum, about 0.1% of the Ti present is emitted in the form of ions. The product remaining in the spiral is dark and consists in the main of TiO. With ZrO_2, impurity ions are emitted first, and disappear at about 1000°K. The optimum temp. for emission of Zr^+ is about 2300°K. The relative heights of the ZrO^+ and ZrO_2^+ peaks as compared with Zr^+ vary with the length of heating, falling on prolonged heating at 2300°K. Long heating is more evidently results in an impoverishment of the oxide in O, and partial conversion of ZrO_2 to ZrO. With SiO_2, emission of Si^+ and SiO^+ began at about 1800°K., i.e. close to the melting temp. of SiO_2. At 1900°K., the main peak is that of Si^+; the peak of SiO^+ is relatively low. A SiO_2^+ peak appears at higher temps. With PbO, only emission of the impurity ions K^+ and Na^+ was observed between 800 and 1300°K.; heating to a higher temp. resulted only in dis-soc, of the PbO and evapn. of Pb, and no emission of

either Pb^+ or PbO^+ ions. (2) That space ionization (in the vapor phase surrounding the incandescent spiral) plays no significant role as compared with the surface ionization, was demonstrated by expts. with a spiral of smaller diam. and smaller potential drop along the spiral: the emission of TiO_2 and ZrO_2 remained unchanged. However, with SiO_2, emission of SiO^+ and SiO_2^+ ions was suppressed, and that of Si^+ very strongly reduced. Thus the emission of Ti^+, TiO^+, Zr^+, and ZrO^+ ions is cert-tainly due to surface ionization. SiO^+ and SiO_2^+ ions are most probably formed as a result of collisions of neu-tral SiO and SiO_2 mols. with electrons, of the type $SiO_2 + e \rightarrow SiO_2^+ + 2e \rightarrow Si^+ + O +$ $e \rightarrow SiO_2^+ + 2e$, and $SiO + e \rightarrow SiO^+ + 2e \rightarrow Si^+ + O + 2e$. This process is also responsible for the major part of the emission of Si^+ ions; part of these ions may originate in surface ionization.   S. Zhuse

STARODUBTSEV, S.V.

Starsdubtsev, S. V., The application of the method of modulated molecular clusters to the investigation of adsorption phenomena. P. 215.

For the measurement of the probability of evaporation of adsorbed atoms from the surface of a red hot metal, the method of modulated atomic or molecular clusters are porposed which are directed on the adsorbing thread. The change of the current of positive ions from the thread with time makes it possible to determine the probability of evaporation of the adsorbed atom per second and the heat of evaporation of the ion and atom. The method is checked on an example of adsorption of K and Na on W. Dermination of the heats of evaporation $\lambda_{k+} = 2.52 eV$ and $\lambda_{Na+} = 3.3 eV$ are made.

The Leningard
Physico-Technical Institute
July 20, 1948

STARODUBTSEV, S.V.; GURSKIY, M.N.; TSOY, A.N.

Measurement of large doses of gamma radiation on the basis of
a liquid scintillator.   Izv. AN Uz. SSR. Ser. fiz.-mat. nauk
8 no.6:83-84 '64.   (MIRA 18:3)

1. Institut yadernoy fiziki AN UzSSR.

LOVTSOV, V.M.; STARODUBTSEV, S.V.

Normal secondary ion-electron and electron-electron emission of thin
potassium chloride films. Trudy FTI AN Uz SSR 3:45-56 '50.
        (Thermionic emission)   (Electron emission)   (MIRA 11:4)
                (Potassium chloride)

IOVISOV, V.M.; STARODUBTSEV, S.V.

Investigation of the correl tion between normal secondary ion-
electron, electron-electron emission, and the thickness of
potassium chloride films. Trudy FTI AN Uz SSR 3:57-75 '50.
        (Thermionic emission)   (Electron emission)   (MIRA 11:4)
                    (Potassium chloride)

LOVTSOV, V.M.; STARODUBTSEV, S.V.

Use of the magnetic mass analyzer for studying the secondary ion emission of dielectric films. Trudy FTI AN Uz SSR 3:111-116 '50.
(Ion beams)   (Mass spectrometry)   (MIRA 11:4)

ROMANOV, A.M.; STARODUBTSEV, S.V.

Surface ionization of lithium. Trudy FTI AN Uz.SSR 4:102-109 '52.
(MLRA 9:1)
(Lithium) (Ionization)

STARODUBTSEV, S. V.

USSR/Physics - Photocells, Sensitive Layer

1 Aug 52

"Action of a Flow of Electrons on the Sensitive Layer of Tube Photocells,"
B.P. Angelov, Ye.M. Lobanov, S. V. Starodubtsev

"Dok Ak Nauk SSSR" Vol 85, No 4, pp 733-735

Studies the dependence of the current in the external circuit of electron-tube selenium
and silver-sulfate photoelements, which are exposed to an electron beam, upon energy
(800-20,000 ev) and upon intensity of the electron beam. Concludes that exposure of
a tube photocell to an electron beam leads to the formation of a tube emf of the
same sign as the photo-emf, and that electron beams can be utilized to study the
properties of blocking layers in tube photocells. Submitted 3 Jun 52.

PA 227T72

STARODUBTSEV, S. V.

Electronics, Electronic and Ionic Emission (1731)
Dokl. AN Uzb. SSR, No 1, 1953, pp 12-16. "Method of Double Modulation for the
Investigation of Secondary Emission Under the Action of Collision by Ions."

To investigate the dynamics of secondary ionic emission a method was developed
that permits one to study the time characteristics of secondary processes. A beam
of ions is freed of neutral particles and is modulated with respect to intensity by
an oscillator generating rectagular impulses with a frequency of 500-1,000 cps
(first modulation is directed against an incandescent target); the secondary ions
are gathered by a collector whose potential relative to the target is modulated by
a saw-toothed oscillator of 25 cps (second modulation).

SO: Referativnyy Zhurnal--Fizika, No 2, Feb 54;(W-30785, 28 July 1954)

STARODUBTSEV, S.V., VOZNESENSKIY, V.L., NOSENKO, B.M.

"Reaction Depth of an Ionic Stream on a Crystal" Dokl. AN Uz
SSR, No 8, 1954, 9-14

        A method of determining the penetration depth of an ionic stream
was suggested by using the properties of weakened luminescence in the crys-
tallophor layer deteriorated by ionic penetration. $Zn_2Si)O_4$ Mn was studied.
The initial behavior of luminescence curves under electron excitation shows
that no sharp boundary of the curve deterioation layer exists. The relaion
of penetration depth to ion energy is nearly linear and only slightly depends
on the type of ions. (RZhFiz, No 11, 1955)

Starodubtsev, S. V.

3

1923. Method of investigating the secondary emission by bombarding conductors with ions. U. A. ARIFOV, A. KH. AYUKHANOV and S. V. STARODUBTSEV. *Zh. ékiper. teor. Fiz.*, 26, No. 6, 714-22 (1954) In Russian.

Usually the phenomena of secondary emission under ion impact are investigated by directing an ion beam from a suitable source on a target, the secondary electron and ion emissions being measured by circuits containing galvanometers and permitting primary and secondary ion currents and secondary electron emission to be separated by suitable change-over operations. The main difficulty in investigating the secondary emission resides in obtaining a pure target surface, and even more, in maintaining the purity of the target surface during the long-duration measurements by galvanometric methods. That is why in most cases the results were obtained not really on the target surface but on undefined adsorbed layers on the target. If, on the other hand, the target is maintained at high temperature to assure desorption of the adsorbed layers, the bombarding ions would also be desorbed and therefore be measured with the secondary particles, thus vitiating the secondary-emission coefficients measured. Comprehensive investigations led to the conclusion that only very rapid methods of

measurement permit exact determinations of secondary emission to be carried out, the influence of temperature and other factors on magnitude and character of this emission to be established and clear and reliable results to be obtained. Only c.r.o. methods can satisfy the requirements; a promising new oscillographic method is that of double modulation, by which the actual secondary emission can be effectively separated from the current of surface ionization of the target. The circuits and set-ups for these methods are described and the possibility of the separation of the various components is proved theoretically. A series of oscillograms of VA-characteristics of the secondary emission of tantalum and tungsten targets of temperatures 300-1350°K shows the possibilities of the new methods.

B. F. KRAUS

Physicotech. Inst., AS, UzSSR

137-58-6-13172

AUTHORS: Romanov, A.M., Starodubtsev, S.V.

TITLE: On the Role of Heterogeneity of a Surface During Adsorption and Ionization of Sodium and Lithium on Tungsten (O roli neodnorodnosti poverkhnosti pri adsorbtsii i ionizatsii natriya i litiya na vol'frame)

ABSTRACT: Evaluation of the influence of spottiness (heterogeneity) of a surface on the emission constants of W by means of comparison of data of electronic and ionic emission. Cathodes with three sets of spots (differing in work-function potential φ_i) and six possible types of distribution of fractions of area occupied by various kinds of spots were examined. The portion of full flow of electron emission from spots w_i at different temperatures was calculated, and it was found that φmin from spots ω increases with decrease in temperature. The apparent (average) work-function potential has a temperature coefficient at variance with zero, even when φ_i does not depend on the temperature. The ionization coefficients of Na and Li on W and

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137-58-6-13172

On the Role of (cont.)

portions of the full current of ion emission withdrawn from spots of i-th type were calculated for selected types of spots. Also, the relative values of the energy of adsorption of atoms of Na on different planes of adsorption of facets of W. Interaction between adsorbed atoms was not taken into account. It is demonstrated that heterogeneity of surface manifests itself differently in relation to adsorption and to ionization of NaLi. Sections on which NaLi are bonded the strongest become "inactive" as to ionization. The portion of ionic current is the greatest at spots having the highest value of φ_i . Comparison data on the ionic and electronic emission leads to the conclusion that the difference in apparent work-function potential determined by these two methods, all other conditions being equal, increases as the temperature of the surface diminishes. Bibliography: 22 references.

I.D.

1. Tungsten--Surface properties   2. Tungsten--Electrical properties
3. Tungsten--Adsorptive properties   4. Sodium atoms--Adsorption
5. Thermionic emission--Analysis   6. Ionic current

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PA - 2799

STARODUBTSEV, S.V.

AUTHOR: ROMANOV, A.M. and STARODUBTSEV, S.V.
TITLE: Adsorption and Ionization of Sodium on Hot Wolfram.
            (Adsorbtsiya i ionizatsiya natriya na goryachem vol'frame, Russian)
PERIODICAL: Zhurnal Tekhn. Fiz., 1957, Vol 27, Nr 4, pp 722 - 733 (U.S.S.R.)
            Received: 5 / 1957   Reviewed: 6 / 1957

ABSTRACT: In order to be able to answer the questions as to whether any pe-
            culiarities are to be observed in connection with the adsorption
            and ionization of sodium atoms, and, if so, of what nature they
            are and what reasons are responsible for such nature, tests were
            carried out with pure tungsten (wolfram), the influence exercised
            by the various factors connected with the experiments was investi-
            gated and evaluated, and, thirdly, the pressure range of the sodium
            vapors was extended. Experiments were carried out by means of two
            types of tightly soldered bulbs. The ionization of sodium was
            examined in accordance with the focussed beam method, and experiments
            concerning the adsorption and the ionization of sodium were carried
            out at low vapor pressures. In the latter case the "flaming" method
            was used. Analysis of measuring results obtained for the sodium
            samples showed that the fact that experimental results exceed the
            computed values of the ion current (in the case of homogeneous
            surface) cannot be explained by any impurity of the bundle by
            foreign basic atoms. Such circumstances are enumerated as make con-
            sideration of the inhomogeneity of the surface, just in the case of

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PA ∞ 2799

Adsorption and Ionization of Sodium on Hot Wolfram.

sodium, of tungsten (wolfram) appear to be of particular importance. It is shown that the part played by oxygen spots on tungsten is of minor importance, and that with their aid the "anomalous" course of the curves of the ion current cannot be explained. It may be assumed that the peculiarities connected with the adsorption and ionization of sodium are due to the inhomogeneity of the surfaces used. In this connection it is of essential importance that inhomogeneity with respect to adsorption and ionization differs in that those domains in which the binding of sodium atoms is strongest are not active with respect to ionization. It may be assumed that, conditions otherwise being equal, the domains with loose structure are the first to be filled up.
(21 illustrations and 11 citations from Slav publications)

ASSOCIATION: LFTI of the Academy of Science of the U.S.S.R., Leningrad
PRESENTED BY:
SUBMITTED: 1.11.1956
AVAILABLE: Library of Congress.

Card 2/2

STARODUBTSEV, S. V.

56-4-3/54

AUTHORS: Arifov, U. A., Ayukhanov, A. Kh., Starodubtsev, S. V.,

TITLE: On the Coefficient of Diffusion of Ions as a Function of the Ratio of the Masses of Colliding Particles (O zavisimosti koeffitsiyenta rasseyaniya ionov ot sootnosheniya mass stalkivayushchikhsya chastits)

ABSTRACT: By means of the method of double modulation the secondary emission of ions was investigated for the case that the masses of the bombarding ions are larger than the atom masses of the target. The following conclusions may be drawn.
1) Positive Cs-ions enter into interaction with nickel atoms according to the condition $V_i \quad \varphi, \; m_1 \; m_2$:
a) Neither in the case of a cold ($300^\circ K$) nor of a hot nickel surface ($1350^\circ K$) may there be detected any secondary ion-electron emission
b) The secondary ion emission from a pure nickel surface (at high temperature) contains only the vaporized ions which formed on the surface of the target after a diffusion process.
2) Positive Ba-ions enter interaction with molybdenum atoms according to the condition $V_i \quad \varphi, \; m_1 \; m_2$:
a) Neither in the case of a cold ($300^\circ K$) nor of a warm molybdenum surface ($1300^\circ K$) may there be detected any secondary ion-electron

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On the Coefficient of Diffusion of Ions as a Function of the Ra-   56-4-3/54
tio of the Masses of Colliding Particles.

emission.
b) No secondary ion emission is observable.
There are 4 figures and 4 Slavic references.

ASSOCIATION: Physical-technical Institute AN Usbek SSR (Fiziko-tekhnicheskiy
institut Akademii nauk Uzbekskoy SSR)

SUBMITTED: April 1o, 1957

AVAILABLE: Library of Congress

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PHASE I BOOK EXPLOITATION   SOV/1444

21(7)

Starodubtsev, S.V. and A.M. Romanov

Radioaktivnyye prevrashcheniya yader i atomnaya obolochka (Radio-
active Transformations of Nuclei and the Atomic Shell) Tashkent,
Izd-vo AN Uzbekskoy SSR, 1958. 498 p. 1,500 copies printed.

Sponsoring Agency: Akademiya nauk Uzbekskoy SSR. Institut yadernoy
fiziki.

Ed. of Publishing House: Gaysinskaya, I.G.; Tech. Ed.: Sharikova, V.P.

PURPOSE: The book is intended for experimental physicists. It is as-
sumed that the reader is acquainted with the principles of quantum
mechanics.

COVERAGE: The author covers a wide range of theoretical and experimen-
tal problems encountered in the study of radioactive transformation.
Considerable attention is devoted to the role of atomic shells in
processes of radioactive transformations. Experimental methods of
investigating radioactive transformations which are directly connect-
ed with the shell (electron capture, γ-ray conversion), are covered

Card 1/8

Radioactive Transformations (Cont.)

in detail. The author considers the influence of shells on the life-
time of radioactive atoms, on energy spectra and on angular correla-
tion of nuclear radiation. The work done in spectrometry of recoil
atoms and correlation of the direction of dispersion and polariza-
tion of particles during β-transformation is analyzed in connection
with the problem of the neutrino and the problem of β-interaction.
The examination of secondary effects during β-disintegration (in-
ternal bremsstrahlung, pair production, etc.) and also the theore-
tical and experimental research on the excitation and ionization
of atoms and molecules during radioactive transformation occupy an
important place in the book. Practical methods of separating iso-
topes and isomers, based on kinetic and electron "activation" of re-
coil atoms, are described. No personalities are mentioned. There
are 523 references, 117 of which are Soviet.

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Foreword

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2

ARIFOV, U.A.; AYUKHANOV, A.Kh.; STARODUBTSEV, S.V.

Secondary emission of negative particles during the bombardment
of foreign films on pure metals with alkali metal ions. Izv. AN
Uz.SSR. Ser. fiz.-mat. nauk no.2:107-115 '58.   (MIRA 11:10)

1. Fiziko-tekhnicheskiy institut AN UzSSR.
       (Ion beams)   (Alkali metals)

ARIFOV, U.A.; AYUKHANOV, A.Kh.; STARODUBTSEV, S.V.; KHADZHIMUKHAMEDOV, Kh.Kh.

Methods for investigating secondary processes caused by ions at high target temperatures during thermoelectronic emission. Izv. AN Uz.SSR.Ser.fiz.-mat.nauk no.5:15-22 '58.   (MIRA 11:12)

1. Fiziko-tekhnicheskiy institut AN UzSSR.
        (Electron emission)

STARODUBTSEV, S.V.

Second International Conference of the United Nations on the
Peaceful Use of Atomic Energy. Izv. AN Uz. SSR. Ser.fiz.-mat.
nauk no.6:87-88 '58.   (MIRA 12:2)
          (Atomic weapons and disarmament)

STARODUBTSEV, S V.

PHASE I BOOK EXPLOITATION   SOV/4586

Tashkentskaya konferentsiya po mirnomu ispol'zovaniyu atomnoy energii. Tashkent,
   1959

Tezisy dokladov (Outlines of Reports of the Tashkent Conference on the Peaceful
   Uses of Atomic Energy) Tashkent, Izd-vo AN Uzbekskoy SSR, 1959. 229 p.
   2,000 copies printed.

Sponsoring Agencies: Akademiya nauk Uzbekskoy SSR; Nauchno-tekhnicheskiy komitet
   Soveta Ministrov UzSSR.

Resp. Ed. for this book: L.G. Gurvich; Ed. of Publishing House: I. G. Gaysinskaya;
   Tech. Ed.: V. P. Bartseva.

PURPOSE: This book is intended for nuclear physicists and other members of the
   scientific community interested in recent progress in the peaceful uses of
   atomic energy.

COVERAGE: This collection of abstracts of reports and papers read at the Tashkent
   Conference on the Peaceful Uses of Atomic Energy reports on research on a number
   of theoretical problems in nuclear and radiation physics, practical problems

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Outlines of Reports of the Tashkent Conference (Cont.)

and methods in the preparation of radioactive isotopes, and the application of isotopes in industry, geology, agriculture, medicine, plant and animal biology, and other branches of the national economy and scientific research. The Table of Contents has been expanded to include authors and titles of abstracted papers appearing in section headings "Plenary Sessions" through "Radioactive Isotopes and Nuclear Radiations in Chemistry". No personalities are mentioned. There are no references.

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Card 3/28

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Outlines of Reports of the Tashkent Conference (Cont.)

[Arifov, U. A., Institute of Nuclear Physics AS Uzbekskaya SSR. Problem of the Charge-Energy Balance During Collision of Slow Atomic Particles]   17

[Denisov, F. P., K. V. Kosareva, and P. A. Cherenkov, Physics Institute imeni P. N. Lebedev AS USSR. Radiation Mechanism of Nuclear Fragments]   18

[Azimov, S. A., U. G. Gulyamov, and B. Rakhimbayev, Fiziko-tekhnicheskiy institut AN UzSSR (Physicotechnical Institute AS Uzbekskaya SSR). Investigation of Excited Fission Fragments]   18

[Velyukhov, G. Ye., A. N. Prokof'yev, and S. V. Starodubtsev, Leningradskiy fiziko-tekhnicheskiy institut AN SSSR (Leningrad Physicotechnical Institute AS USSR). Investigation of the Reactions of Capture by F^{19} and P^{31} at Neutron Energies of 14.1 Mev]   19

[Gorbunov, A. N., V. A. Dubrovina, D. Kaipov, K. Kuvatov, A. I. Orlova, V. A. Osipova, V. A. Sakovich, V. S. Silayeva, F. A. Fomin, and P. A. Cherenkov, Physics Institute imeni P. N. Lebedev AS USSR. Investigation of Photodisintegration of Nitrogen, Oxygen and Neon]   19

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SOV/4586

Outlines of Reports of the Tashkent Conference (Cont.)

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SOV/4586

Outlines of Reports of the Tashkent Conference (Cont.)

Card 16/28

5(4)
AUTHORS: Starodubtsev, S.V., Member AS Uz SSR,
             Ablyayev, Sh.A., and Generalova,V.V.

TITLE: Radiolysis of Saccharose (Radioliz sakharozy)

ABSTRACT: The influence of γ-rays (Co^{60}) to the water solution of
             saccharose is investigated. It is stated: 1) change of the
             specific rotation of the plane of polarization; 2) this change
             increases with the radiation and decreases with the concentrat-
             ion of the solution; 3) here the decision depends on the solvent;
             4) a great quantity of hydrogen, oxygen, CO_2 and several hydro-
             carbons is separated; 5) change of the solution velocity in
             water; irradiated saccharose is solved ca. 2-3 times quicker
             than the non-irradiated saccharose; 6) change of the colour of
             the solution.
             There are 15 references, 5 of which are Soviet, 2 English, and
             8 American.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN Uz SSR (Physico-Technical
             Institute,AS Uz SSR)

SUBMITTED: September 10, 1958
Card 1/1

66529

24(3),24(4),21(7)- 24,6800

SOV/166-59-3-2/11

AUTHORS: Lobanov,Ye.M.,and Starodubtsev,S.V.

TITLE: Investigation of the Electromotive Force Which Arises During the Irradiation of the Photovoltaic Cell With α-Particles

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-matematicheskikh nauk, 1959, Nr 3, pp 5-17 (USSR)

ABSTRACT: The investigation was carried out 1) for the determination of the optimal conditions for the construction of economic atomic sources of current and 2) because the application of particles with a bounded and easily measurable free path represents a sensible mean for the investigation of processes in the immediate neighborhood of the photovoltaic cell. Similar questions are treated by the author and others in $\underline{/}$ Ref 1,2,3 $\underline{/}$. Principal results of the present paper: The current in the outer circuit of the photocell irradiated with α-particles is proportional to the intensity of the flow of the particles falling into the cell. The photovoltaic cells can be used for the measurement of the intensity of flow of charged particles. For an increasing total dose of the radiation the current decreases somewhat in the outer circuit of the irradiated chain. From the curve "current in the outer circuit - energy of the

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665:3

21(1),21(7) 24.6510   SOV/166-59-3-7/11

AUTHORS: Starodubtsev,S.V.,and Khrushchev,B.I.

TITLE: Angular Distributions for Protons of the Reaction $B^{10}(d,p)B^{11}$

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-matematicheskikh nauk, 1959, Nr 3, pp 47-51 (USSR)

ABSTRACT: The paper contains the results of an experimental investigation of the angular distribution of protons of two groups P_0(Q=9.24 MEV) and P_1(Q=7.1 MEV) for the reaction $B^{10}(d,p)B^{11}$ for four values of the energy of falling deuterons: E_d=5; 5.75; 6.5 and 7.25 MEV. The investigation was carried out in a chamber analogous to that described in [Ref 8]. The recording of the secondary protons was carried out with the aid of thick-layer photo emulsions. The results are represented in several figures. The authors try to explain the deviations from the theoretical data [Ref 9]. There are 9 figures, and 19 references, 3 of which are Soviet, 1 English, and 15 American.

ASSOCIATION:Institut yadernoy fiziki AN Uz SSR (Institute of Nuclear Physics AS Uz SSR)

SUBMITTED: February 5, 1959

Card 1/1

66334

24(4)   24,7700

SOV/166-59-3-9/11

AUTHORS: Niyazova,O.R., and Starodubtsev,S.V.

TITLE: The Process   of the Activation in a Monocrystalline Cadmium
             Sulphide Irradiated by X-Rays

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-
             matematicheskikh nauk, 1959, Nr 3, pp 65-69 (USSR)

ABSTRACT: By an experimental investigation the authors come to the
             following results: If a monocrystalline cadmium sulphide is
             irradiated with a broad bundle of X-rays, then the obtained
             electrical current very quickly reaches its stationary value
             (uniform distribution of the current carrier in the crystal!).
             The irradiation of a local zone lying in the mid-section of
             the crystal leads to slow current variations depending on
             the antecedent of the crystal: If the crystal previously was
             irradiated broadly, then the current very quickly reaches a
             large stationary value; if the crystal previously was not
             irradiated, then there appears a slow enlargement of the
             conductivity. During the experiments the current increased
             by several hundred times (activation!). In room temperature
             an excited crystal remains in the excited state a long while.

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06550

SOV/166-59-4-1/10

21(7)
AUTHORS: Khrushchev, B.I. and Starodubtsev, S.V., Academician AS UzSSR

TITLE: On the Interaction of Deuterons With the Nuclea B^{10}

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-matematicheskikh nauk, 1959, Nr 4, pp 3-8 (USSR)

ABSTRACT: The authors investigate the question whether the reaction $B^{10}(d,p)B^{11}$ in essential appears by a formation of a compound nucleus or by a direct nuclear interaction. Therefore with the aid of a multiple-plate camera the cross sections (with an exactness of $\pm$ 30%) and the angular distributions were determined. The experiments are described in $\lfloor$ Ref 11 $\rfloor$. The dependence of the distributions on the energy E_d is not large, in all cases the distributions show a characteristic maximum clearly dis-placed towards the left hand side ($\sim 20^{\circ}$). By the considerations of $\lfloor$ Ref 9,10 $\rfloor$ this assertion allows to conclude that the considered reaction in the case of the transition to the second and third state of excitation in essential appears at the surface of the nucleus by a direct interaction under participation

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06374
SOV/166-59-5-1/9

24(4);24(7);23(1)

AUTHORS: Lobanov, Ye.M., Romanov,A.M., and Starodubtsev, S.V.

TITLE: Multi-Angular Magnetic Broad-Band Spectrograph

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-matematicheskikh nauk, 1959, Nr 5, pp 3-11 (USSR)

ABSTRACT: The authors point out the necessity to construct a magnetic spectrograph having the advantages of the spectrograph of Buechner $\angle$ Ref 18, 19 $\angle$ but simultaneously having the following properties: 1) resolving power of 0.1% for a relative solid angle $\sim 10^{-4}$ ster; 2) simultaneous investigation of particles in an utmost large interval of energy; 3) simultaneous measurement of the distribution of energy for 10-15 different departure angles; 4) covering of the angular domain from 0 to 170° by every 2-3°; 5) usefulness for rigid and gaseous targets. Such a spectrograph is called a multi-angular magnetic broad-band spectrograph. The authors discuss questions combined with the construction of this device. The ionic optics calculated by Leise $\angle$ Ref 20 $\angle$ is recommended. The entrance in and the departure of the particles from the camera shall be made like

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...magnetic iron divided into

The authors mention L.M.Nemenov, N.A.Vlasov, V.F.Litvin, and V.P.Rudakov.

There are 6 figures and 21 references, 6 of which are Soviet,

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR; Institut yadernoy fiziki AN Uz SSR (Physical-Technical Institute AS USSR; Institute of Nuclear Physics AS Uz SSR)

SUBMITTED: April 20, 1959

Card 2/2

21(7)
AUTHORS:

Starodubtsev, S. V., Makaryunas, K. V.   SOV/56-36-5-61/76

TITLE:

The Angular Distributions of Tritons From the Reaction
Li^7(α,t)Be^8 (Uglovyye raspredeleniya tritonov iz reaktsii
Li^7(α,t)Be^8)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959,
Vol 36, Nr 5, pp 1594-1595 (USSR)

ABSTRACT:

In order to obtain information concerning the reaction
mechanism the authors of the present "Letter to the Editor"
investigated the angular distributions of tritons in the
aforementioned reaction at Q = - 2.56 Mev by the method of
the thick photoemulsion. The α-particles were accelerated
on the cyclotron to 8.34, 10.15, 11.5, 13.2 and 14.7 Mev. At
all these energies similar angular distributions were
obtained. The curves obtained representing the dependence
of the differential cross section (in relative units) on
the angle in the center of mass system is shown for
E_α = 14.7 Mev by the upper and for E_α = 13.2 Mev by the
lower figure. The form of the angular distributions and
their weak dependence on the energy of the bombarding

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The Angular Distributions of Tritons From the Reaction   SOV/56-36-5-61/76
$Li^7(\alpha,t)Be^8$

α-particles indicates the important part played by the direct interaction mechanism. A comparison with Butler's theory shows good agreement for $l = 1$ between the theoretical and the experimental curve. The absolute values of the differential cross sections at 16° (center of mass system) are given as amounting to $9.2^{+3.7}_{-1.85}$ mb/steradian $(E_\alpha = 13.2$ Mev) and $9.4^{+4.0}_{-2.0}$ mb/steradian $(E_\alpha = 14.7$ Mev). There are 2 figures and 2 references.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut (Leningrad Physico-Technical Institute)

SUBMITTED: February 4, 1959

Card 2/2

BEL'SKIY, S.A.; STARODUBTSEV, S.V.

Rayleigh scattering of γ-rays from Co^{60} at small angles. Zhur.
eksp.1 teor.fiz. 37 no.4:983-990 O '59.
(MIRA 13:5)

1. Leningradskiy fiziko-tekhnicheskiy institut Akademii
nauk SSSR.
(Gamma rays--Scattering)

SOV/20-124-1-16/69

9(3)
AUTHORS: Arifov, U. A., Academician, AS Uzbekskaya SSR, Ayukhanov, A. Kh., Starodubtsev, S. V., Academician, AS Uzbekskaya SSR, Khadzhimukha-medov, Kh. Kh.

TITLE: On a Method of Investigating the Secondary Processes Which Are Caused by Ions at High Temperatures of the Target in the Case of a Thermoelectronic Emission (O metodike issledovaniya vtorichnykh protsessov, vyzyvayemykh ionami pri vysokikh temperaturakh misheney v prisutstvii termoelektronnoy emissii)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 1, pp 60-62 (USSR)

ABSTRACT: It was interesting to perfect the method of double modulation used for the investigation of secondary ion processes at high tempera-tures (at which a flux of thermal electrons exists). The apparatus used was similar to one that has already been described (Ref 2), with the exception that an electrically heated filament was sub-stituted for the plane target. A schematical drawing shows the principles of the electric wiring diagram. Target temperature was determined from the heating current and from the diameter of the filament; the work function was determined by the method of Richardson straight lines, taking a correction for the Schottky effect into account. The primary and secondary ion fluxes and also

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On a Method of Investigating the Secondary Processes Which Are Caused by Ions at High Temperatures of the Target in the Case of a Thermoelectronic Emission

the current intensity of the thermal electrons were determined from the coordinates of oscillograms. In the case under investiga- tion the application of the method of double modulation is reduced to the following: the primary ion beam accelerated by the field is modulated with respect to intensity by a generator for rectilinear pulses with a frequency of 500 - 1000 cycles (first modulation) and directioned on to the target. The flux of the secondary emission from the target is then collected by a collector and is transmitted to the imput of the vertical amplifier of an oscillograph. The horizontal development of this oscillograph is synchronized with the generator of the saw-tooth pulses. Three oscillograms of a filament-like W-target (which was bombarded with 840 ev K^+-ions) are added at 1800° K. Secondary ion emission consists of 3 components. On the basis of the here discussed examples it is possible to de- fine the coefficient of the secondary ion emission as the ratio of the sum of components of the secondary ion fluxes to the primary ion flux. The amount of this coefficient depends in a complicated manner on the energy, the ionization potential, the mass of ions, the temperature, the work function, and the mass of the ions con- tained in the target. It is thus possible, by the here discussed

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SOV/20-124-1-16/69

On a Method of Investigating the Secondary Processes Which Are Caused by Ions at High Temperatures of the Target in the Case of a Thermoelectronic Emission

improved method of double modulation, separately to investigate the individual components of secondary emission, viz: the amperages of the scattered, evaporated, and diffused ions, as well as the thermoelectrons occurring in the bombardment of pure metal targets by positive ions (at high temperature in the presence of considerable thermoelectronic emission). There are 2 figures and 3 Soviet references.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk UzSSR (Physico-Technical Institute of the Academy of Sciences, Uzbekskaya SSR)

SUBMITTED: August 29, 1958

Card 3/3

SOV/20-127-4-14/60

21(5)
AUTHORS:
Velyukhov, G. Ye., Prokof'yev, A. N., Starodubtsev, S. V.,
Academician of the UzbSSR

TITLE:
Investigation of the Reactions $F^{19}(n,d)O^{18}$ and $P^{31}(n,d)Si^{30}$ at a Neutron Energy of 14.1 Mev

PERIODICAL:
Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 4, pp 781-783 (USSR)

ABSTRACT:
The present paper investigates the pick-up reaction (n,d) proceeding without the formation of a compound nucleus of the reactions mentioned in the title. The reaction $T(d,n)He^4$ was used as a neutron source at deuteron energies of 260 kev. A proportional counter was used as a monitor; the absolute measurement was carried out with the α-particles originating from the source reaction and recorded by means of a scintillation counter with CsJ(Tl)-crystal. A telescope consisting of two proportional scintillation counters was used for investigating the reaction products; the telescope was placed in the same chamber as the reaction target. One of the proportional counters was used for measuring the losses, the other one for determining the reaction energy which made it

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SOV/20-127-4-14/60

Investigation of the Reactions $F^{19}(n,d)O^{18}$ and $P^{31}(n,d)Si^{30}$ at a Neutron Energy of 14.1 Mev

possible to determine these two factors at the same time. The results on the reaction energies agreed with those found by Wolfe et al (Ref 6). The differences in the energy losses for protons and neutrons of the same energy amounted to ~75%. Therefore, both particles could be reliably identified. The angular distribution of the secondary particles was determined from the change in the angle between the telescope axis and the direction in which the neutrons escaped. The background was determined under all angles under which the investigations were carried out. The energy spectra of the deuterons of the two reactions for the angle θ=0 are indicated in figures 1 and 2. Figure 3 shows the energy spectra of the deuterons of both reactions under θ = 20°, and figure 4 the deuteron angular distribution of both reactions (transition into the ground state); besides the experimentally determined values, all diagrams also contain the theoretical curves (Butler et al).

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Investigation of the Reactions $F^{19}(n,d)O^{18}$ and $P^{31}(n,d)Si^{30}$ at a Neutron Energy of 14.1 Mev

The value -5.9 ± 0.3 Mev was obtained for the Q of the first reaction, and $Q = -5.2\pm0.2$ Mev was found for the second reaction. In the first case, besides the transition into the ground state, transitions to higher energy levels take place. The angular distribution was in good agreement with the theoretical values found by Butler (Ref 9). Finally, the authors thank A. P. Pulin and A. M. Tsvetkov for their assistance in the experiment. There are 4 figures and 12 references.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk SSSR (Institute of Physics and Technology of the Academy of Sciences, USSR)

SUBMITTED: May 23, 1959

Card 3/3

66473

SOV/20-129-1-19/64

24(8) 5.4500(B)

AUTHORS: Starodubtsev, S. V., Academician, Academy of Sciences, UzbekskayaSSR, Ablyayev, Sh. A., Yermatov, S. Ye.

TITLE: Variation of Adsorptive Properties of Silicagel Under the Action of Gamma-irradiation

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 1, pp 72 - 73 (USSR)

ABSTRACT: Ionisation and excitation of atoms and molecules as well as displacement of the atoms is caused in solids under the action of penetrating rays. It becomes manifest by an external variation of the mechanical, optical, electrical, physico-chemical, and chemical properties of the bodies. Different preliminary works dealing with this subject are shortly reported. The properties of irradiated silicagel have hitherto been investigated only by A. N. Terenin et al (Refs 6,7). These authors irradiated silicagel by ultraviolet rays and showed, that a process occurs, similar to that on heat treatment, i. e. hydroxyl groups are separated and free valences occur at the surface. Present paper describes the experimental investigation of adsorptive properties,

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SOV/20-129-1-19/64

Variation of Adsorptive Properties of Silicagel
Under the Action of Gamma-irradiation

basing on the adsorption of gases, measured by means of
thermocouples and ionization manometers. Experimentally pro-
duced silicagels of the type KSK were used for this experi-
ment. Prior to the investigation, these silicagels were sub-
ject to careful, long lasting heat treatment, and were then
irradiated by γ-rays (dose rate $15 \cdot 10^4$ to $35 \cdot 10^4$ r/hour, total
dosage $1.5 \cdot 10^6$ to $2 \cdot 10^6$ r) in evacuated glas tubes (which
were provided with manometer tubes). The following is shown
by the results of these investigations: The adsorptive power of
silicagel increases remarkably under the influence of γ-rays,
and the amount of the gas, adsorbed by the irradiated silica-
gel increases up to a known boundary value, with increasing
irradiation dose. The first diagram shows the change of the
adsorptive properties of silicagel with respect to H_2, N_2 and Ar
at low pressures, and the second diagram shows the same for
CO_2, CO, NH_3, C_2H_4 and H_2S, under the condition, that pressures
of $1 - 10^{-1}$ torr prevailed before the irradiation. According
to these diagrams, the adsorptive power of the irradiated
silicagel samples increases differently for different gases.

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SOV/20-129-1-19/64

Variation of Adsorptive Properties of Silicagel
Under the Action of Gamma-irradiation

At comparatively high gas pressures (4 torr) the irradiated
silicagel can adsorb an amount of hydrogen of $2.5 \cdot 10^{-5}$ of
its total weight. In this experiment, it is important and
interesting, that silicagel assumes its previous properties, if
heated to $100°$. At room temperature, almost no such "annealing"
of the irradiation effect may be noticed. Obviously, the
changes of the adsorptive properties of silicagel under irra-
diation with γ-rays may be explained by the separation of
hydroxyl groups and the formation of free valences at the
surface as well as by the interruption of the bonds between
the free radicals (which were formed during the primary heat
treatment) and by the high ionization of the gas (the adsorbate),
effecting an increase of the adsorptive power of silicagel.
There are 3 figures and 7 references, 6 of which are Soviet.

SUBMITTED: June 9, 1959

Card 3/3

66734

SOV/20-129-2-19/66

24(4)   5. 4500 (B)

AUTHORS: Starodubtsev, S. V., Academician, Uzbekskaya SSR, Gurskiy, M. N., Sizykh, A. G.

TITLE: Change of the Optical Properties of Benzene Irradiated by γ-Rays

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 2, pp 307-309 (USSR)

ABSTRACT: The present paper deals with the investigation of such optical properties of irradiated material which make it possible to determine the accumulation of transformation products. For this purpose the scattering of light, luminescence, rotation of the polarization plane, refractive index, and the molecular absorption spectra of pure benzene were investigated. Benzene was purified by drying over sodium, subsequent fractional distillation and finally by recrystallizing it twice. Co^{60} served as source of γ-radiation. At a high integral irradiation dose ($110 \cdot 10^6$ r) an insoluble yellowish-white precipitate is formed which may be easily separated by centrifugeing. Subsequently the samples were distilled under sealed ampules in vacuum at a temperature of 35 to 40°. In the heavy fractions a viscous yellow liquid was formed

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SOV/20-129-2-19/66

Change of the Optical Properties of Benzene Irradiated by γ-Rays

which is heat resistant. The degree of depolarization decreases with increasing dose of irradiation, viz. due to the increase of the isotropic component of the Rayleigh scattering. The anisotropic component I_x shows only unimportant fluctuations with respect to the isotropic component I_z. This indicates that in the isotropic liquid isotropic inhomogeneities occur. At doses of $5 \cdot 10^6$ r chloroform groups are observed which determine the color of the compound. With increasing dose the purely molecular scattering passes into a scattering of the Tyndall type which is in connection with the occurrence of larger particles of the radiolysis products. The luminescence spectra were recorded by a three-prism spectrograph of the type ISP-51 to determine the spectral composition. A diagram shows the results of the photometric recording which illustrate the dependence of the density D on the wavelength λ. With increasing irradiation dose of benzene the intensity of luminescence increases especially in the red range of the spectrum. The luminescence character of the irradiated samples is confirmed by the complete extinction when small quantities of aniline are added. The effects described here may be explained by the $\mathcal{L}$

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Change of the Optical Properties of Benzene Irradiated   SOV/20-129-2-19/66
by γ-Rays

properties of the large molecules which are formed in the
radiolysis from the initial benzene. The rotation of the polariza-
tion plane of the irradiated benzene is also of interest. This
indicates the occurrence of asymmetric molecules without center
and plane of symmetry. These results lead to the following
conclusions: (1) The effect of the γ-rays on benzene changes its
optical properties which illustrate the dynamics of the radiolysis
processes. (2) The change of the character of the inhomogeneities
and of their development at increasing dose may be determined by
the method of light scattering. (3) The luminescence of the
irradiated benzene is shifted into the visible range. There are
2 figures and 5 references, 3 of which are Soviet.

SUBMITTED: July 9, 1959

Card 3/3

SOV/20-129-3-19/66

24.6600

AUTHORS: Starodubtsev, S. V., Academician of the
Uzbekskaya SSR, Makaryunas, K. V.

21 (7)

TITLE: On the Mechanism of Direct Interaction in the Reaction $Li^6(\alpha,d)Be^8$

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 3, pp 547-549 (USSR)

ABSTRACT: First, a brief report is given about the present stage of the
problem on the basis of some earlier papers. The authors carried
out experiments with α-particles of the energy of 8.34 and
13.2 Mev, which were accelerated in the cyclotron of the
Fiziko-tekhnicheskiy institut Akademii nauk SSSR (Physico-
technical Institute of the Academy of Sciences, USSR).
Lithium targets of natural isotopic composition were then
bombarded herewith. The particles emitted from the target were
recorded on photographic plates of the type Ya-2 (emulsion
thickness 100 μ), which were located in a scattering chamber
constructed by S. V. Starodubtsev, Ye. M. Lobanov and I. M.
Shcheglov. The average angle between the plane of the photo-
graphic plate and the direction of motion of the secondary
particles leaving the targets amounted to 10°. During
investigation of the photographic plates under the microscope,
an intense group of deuterons was found which had been produced

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On the Mechanism of Direct Interaction in the Reaction   66452
SOV/20-129-3-20/70
$Li^6(\alpha,d)Be^8$

bombarding particles. All this, and the rather large reaction cross section are indicative of the important part played by the process developing without the formation of a compound nucleus. Probably, the α-particles knock out deuterons from the L^6-particles and a substructure in form of a deuteron probably exists in the L^6-nucleus for a certain time. There is a certain agreement between Butler's theory and experimental results. The authors thank the co-workers of the Physico-technical Institute of the AS USSR, who collaborated in the present investigation. There are 1 figure and 9 references, 2 of which are Soviet.
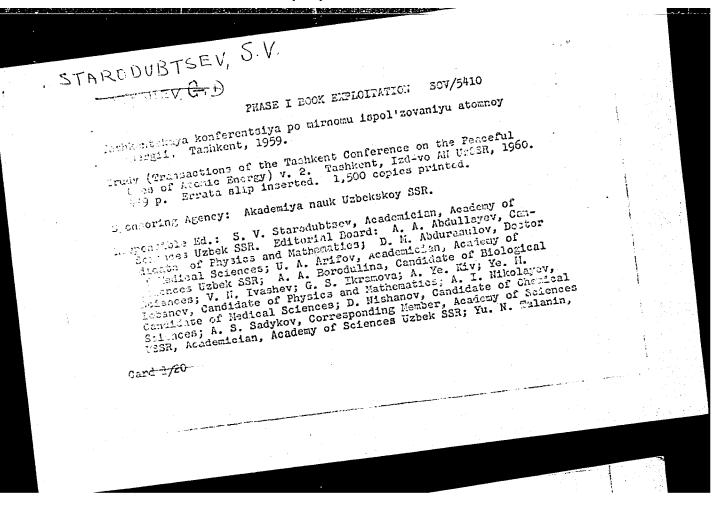
SUBMITTED: June 26, 1959

Card 3/3

STARODUBTSEV, S. V.

PHASE I BOOK EXPLOITATION   SOV/5410

Tashkentskaya konferentsiya po mirnomu ispol'zovaniyu atomnoy energii. Tashkent, 1959.

Trudy (Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy) v. 2. Tashkent, Izd-vo AN UzSSR, 1960. 339 p. Errata slip inserted. 1,500 copies printed.

Sponsoring Agency: Akademiya nauk Uzbekskoy SSR.

Responsible Ed.: S. V. Starodubtsev, Academician, Academy of Sciences Uzbek SSR. Editorial Board: A. A. Abdullayev, Candidate of Physics and Mathematics; D. M. Abdurasulov, Doctor of Medical Sciences; U. A. Arifov, Academician, Academy of Sciences Uzbek SSR; A. A. Borodulina, Candidate of Biological Sciences; V. N. Ivashev; G. S. Ikramova; A. Ye. Kiv; Ye. N. Lebanov, Candidate of Physics and Mathematics; A. I. Nikolayev, Candidate of Medical Sciences; D. Nishanov, Candidate of Chemical Sciences; A. S. Sadykov, Corresponding Member, Academy of Sciences UZSR, Academician, Academy of Sciences Uzbek SSR; Yu. N. Talanin,

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17 6

Transactions of the Tashkent (Cont.)   SOV/5410

instruments used, such as automatic regulators, flowmeters, level gauges, and high-sensitivity gamma-relays, are described. No personalities are mentioned. References follow individual articles.

TABLE OF CONTENTS:

RADIOACTIVE ISOTOPES AND NUCLEAR RADIATION
IN ENGINEERING AND GEOLOGY

Lobanov, Ye. M. [Institut yadernoy fiziki UzSSR - Institute of Nuclear Physics AS UzSSR]. Application of Radioactive Isotopes and Nuclear Radiation in Uzbekistan   7

Taksar, I. M., and V. A. Yanushkovskiy [Institut fiziki AN Latv SSR - Institute of Physics AS Latvian SSR]. Problems of the Typification of Automatic-Control Apparatus Based on the Use of Radioactive Isotopes   9

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Transactions of the Tashkent (Cont.)

Card 8/20

68585

24.7700

S/166/60/000/01/005/011

24(2),24(4)

S. V.

AUTHORS: Starodubtsev,O.R.,Academician of the AS Uz SSR, and Niyazova,O.R.

TITLE: Sonde-Type Characteristics of the Roentgen Conductivity of the
Monocrystals CdS

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-
matematicheskikh nauk, 1960, Nr 1, pp 40-46 (USSR)

ABSTRACT: With the aid of a local excitation of a narrow crystal region the
author investigated the dependence of the sonde-type curves of
the roentgen conductivity on the polarity and strength of the
electrical field, on the size of the crystal, and on the intensity
of the penetrating radiation. It was stated that the conductivity
of CdS is generated by electrons as well as holes, where under
ceratin assumptions the influence of the positive carriers
becomes dominant. It is shown that the obtained sonde-type curves
are very sensible characteristics of the inner inhomogeneities of

Card 1/2

STARODUBTSEV, S.V., akademik

V.I.Lenin and the physics of the microworld; on the 90th anniver-
sary of the birth of V.I.Lenin. Izv.AN Uz.SSR. Ser.fiz.--mat.nauk
no.2:3-9 '60.
(MIRA 13:10)

1. Akademiya nauk UzSSR.
(Physics--Philosophy)

STARodubTSEV, S.V.

S/166/60/000/03/04/011
C111/C222

AUTHORS: Velyukhov, G.Ye., Prokof'yev, A.N., Academician AS Uz SSR, and
           Starodubtsev, S.V.

TITLE: A Method for Identifying Charged Particles From Reactions With Quick
           Neutrons

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-matemati-
              cheskikh nauk, 1960, No. 3, pp. 24 - 31

TEXT: For the investigation of the nuclear reactions (n,p), (n, d), (n, α)
the charged particles appearing during the configuration interaction must be
identified ; that leads to several difficulties. The authors propose a method
basing on the measurement of $E \circ \frac{dE}{dx}$ while usually $\frac{dE}{dx}$ is measured. The
proposed method permits to identify dependably the charged particles in a
large energy interval. The scheme of devices used for the application of the
method is described in detail.

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34856 R
S/166/60/000/004/008/008
B112/B202

9,4177 (1043,1035)

AUTHOR: Starodubtsev, S. V., Academician of the Academy of Sciences
            Uzbekskaya SSR, Niyazova, O. R.

TITLE: Phenomenon of the activation of conductivity in monocrystal-
            line cadmium sulphide treated with X-rays

PERIODICAL: Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya fiziko-
            matematicheskikh nauk, no. 4, 1960, 92 - 94

TEXT: The present paper is the continuation of an earlier one (Izv. AN
UzSSR, ser. fiz.-mat. nauk, 1959, no. 3, 65) in which the authors described
the activation of conductivity of a crystal on exposure to X-rays: uniform
irradiation of the entire crystal surface causes a rapid activation of
conductivity while partial irradiation with a narrow beam of rays leads to
a slow increase in activation until a steady value is attained. In this
case the previous treatment of the specimen is of great importance. The
present paper contains three diagrams illustrating the behavior observed:
Fig. 1 shows the course of local X-irradiation at the point of maximum
intensity, with time; Fig. 2 shows the thermal annealing for the activation

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